

1           1. (Original) A high speed, low cost, wide spectrum plant identifier apparatus adapted to  
2 be mounted on a farm vehicle for selectively identifying plants within a field by species and for  
3 selectively applying chemicals thereto for the purposes of reducing the chemical costs and the  
4 excessive chemical application which may otherwise result in pollution problems, said apparatus  
5 comprising:

6           a) a sensing device for receiving reflected light from a plant, said device including a  
7 diffraction element for separating the reflected light into segments of different wavelengths and a  
8 linear sensor array having elements positioned to receive the segments and to measure the  
9 relative magnitude of such segments to define a wide spectral distribution of the plant;

10          b) a digital identifier connected to said sensing device and having a memory for  
11 memorizing a spectral distribution of light representing a first plant species from the field, and  
12 additional memory for receiving a spectral distributions of other plants from the field and  
13 programmable logic circuitry;

14          c) said logic circuitry having a program to compare the reflected spectral distribution of  
15 other plants with the memorized spectral distribution of the first species and to provide an output  
16 indicating substantial similarity between the distributions for effecting selective application of  
17 chemicals to the plants of the first species as the associated farm vehicle traverses a field.

1           2. (Original) An apparatus as recited in Claim 1 in which said identifier comprises a  
2 Digital Signal Processor.

1           3. (Original) An apparatus as recited in Claim 1 in which said program includes the  
2 routine of making a regression analysis to determine the similarity between a first plant species